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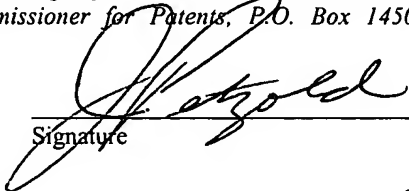


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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Signature

Appl No. : 10/512,104
Applicant : John D. Jacobs
Filed : October 21, 2004
Title : CONTACT INSERT CARTRIDGE FOR PLUGS OF
TRACTOR/TRAILER JUMPER CABLES

Confirmation No. 6845

TC/A.U. : 2833
Examiner : E.A. Leon

Docket No. : 49301/P234
Customer No. : 23363

**STATEMENT OF INTERVIEW CONTENT
37 CFR 1.133 (b) and MPEP 713.04**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Post Office Box 7068
Pasadena, CA 91109-7068
June 23, 2006

Commissioner:

Pursuant to 37 CFR 1.133 (b) and MPEP 713.04, this is a statement as to the substance of an interview held in the Office on June 13, 2006, between Examiner Edwin A. Leon and applicant's counsel Hayden A. Carney. The interview was requested by applicant.

Exhibits and Demonstrations

Counsel brought to the interview and left with the Examiner the following tangible things:

1. Copy of current catalog (CAT0504) of Phillips Industries, a dba of applicant's assignee. The following pages (copies of the same are attached

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hereto) of that catalog were referred to in the interview:
inside front cover, and pages 1, 4-6, 13, 14 , and 20;

2. Partial specimen of Phillips Part No. 30-9324 (see catalog pages 4 and 5), namely, a (green) plug and short length of 7-conductor (green) cable connected to and extending from the rear end of the plug, herein called "Green Plug";
3. Partial specimen of Philips Part No. 30-4320 (see catalog page 6), namely, a die cast metal plug and short length of 7-conductor (green) cable connected to and extending from the rear end of the plug, herein called "Metal Plug"; and
4. Specimen of Phillips Part No. 15-720 7-way socket (see catalog page 20).

Claims Discussed

Clams 1, 2, 7, 31 and 32 of April 24, 2006, were discussed.

Proposed Substantive Amendments

No substantive claim amendments were proposed or discussed.

Outcome of Interview

No effective agreement or allowability of claims was reached at the time of the interview. The Examiner agreed to consult with a primary Examiner or a SPE about withdrawal of the Advisory Action of May 19, 2006, and about allowance of claims.

Review of Interview Content

By reference to the diagram presented on the inside front cover and page 1 of the Phillips catalog, applicant's counsel explained that this invention provides improvements in the plugs at

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the ends of the 7-wire cable (see "D" in the diagram) used to provide an electrical connection between a truck tractor and a truck trailer (or between adjacent trailers in multi-trailer rigs). Each plug is matable with a socket (see "R" in the diagram). In the U.S., certain properties of the plugs and sockets are governed by Society of Automotive Engineers (SAE) standard J560 to assure that any trailer can be connected electrically to any tractor. A copy of SAE J560 is of record in this application.

The Metal Plug exhibit represents the state of the art before the advent of this invention. The Green Plug exhibit embodies the present claimed invention. The principal practical difference between those plugs is that the plug contacts of the Green Plug which co act with the socket contacts are quickly replaceable as a set using only a screwdriver, whereas the corresponding contacts of the Metal Plug are replaceable only with the use of more tools and much time and effort.

Counsel disassembled the Metal Plug (see Part No. 15-730 at catalog page 13) so that the cable and the plug contact carrier could be pushed forward through the plug housing to fully expose the contact carrier and the adjacent portion of the cable. The Examiner was able to see that, as initially manufactured, the seven contacts of that plug were fully embedded in a molded plastic contact carrier, except where the female ends of the contacts were visible in respective round openings in the front end of the molded contact carrier at the end of the carrier opposite from the cable. The connections of the cable wires to the plug contacts were inaccessible as they were inside the molded contact carrier. Counsel explained that if the contacts of the Metal Plug have become corroded or damages, a user of the Metal Plug had two choices, namely, 1) replace the entire cable assembly including the plugs at each end of the cable (costly), or 2) remove the contact carrier from the cable and substitute for it a replacement set of contacts in a new carrier. The latter choice requires the use of a "replacement insert" such as Part No., 15-711 (catalog page 14). Pursuit of choice 2) also requires the use of a wire cutter, a wire stripper, one or two screwdrivers, and the following multi-step process:

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- a. unscrew the large set screw at the rear end of the Metal Plug to release the screw from clamping action on the cable,
- b. remove the smaller set screw from the plug housing to free the molded black contact carrier for movement out of the open end of the plug housing,
- c. push the cable into the rear end of the plug housing to cause the cable end, and the black contact carrier to emerge from the open end of the plug housing,
- d. cut each of the seven insulated cable wires very close to the rear end of the black contact carrier,
- e. dispose of the severed contact carrier,
- f. strip the insulation from each of the seven cable wires to expose 1/2 to 3/4 inch of bare wire,
- g. insert the stripped wire ends into the correct holes in the rear end of the replacement insert (Part No. 15-711) using the color coding of the insulation on each wire to identify the correct hole in the rear end of the replacement insert,
- h. tighten each of seven set screws accessible in the sides of the replacement insert, thereby to secure each wire in the respective contact element in the replacement insert,
- i. pull on the cable to seat the installed replacement insert in the plug housing,

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- j. reinsert the small set screw through the plug housing opening into the installed replacement insert, and
- k. tighten the large set screw to clamp the cable into the rear portion of the plug housing.

In this way, all seven of the contact elements in the Metal Plug are replaced. The underlined aspects of step g) are critical because, as stated in SAE J560 (Table 2), each of the seven wires in the cable corresponds to a particular function as trailer circuit, and misconnection of a cable wire to the replacement insert can have serious consequences.

Counsel then demonstrated replacement of the seven contacts of the Green Plug which are engageable with respective socket contacts. This was done in two minutes or less using only a small screwdriver and the following steps:

- (1) manually unscrew the sleeve (around the cable) from the rear end of the plug housing to unclamp the cable from the housing,
- (2) remove the set screw from the plug housing to free the housing contents (notably the contact cartridge) for movement axially out of the plug housing,
- (3) push the cable into the plug housing to cause the contact cartridge 20 (see Fig. 1, e.g.), and the end of molded body 23 on the end of cable 11, to emerge from the open front end of the plug housing,
- (4) pull on the contact cartridge 20 to separate it from body 23,
- (5) push the rear end of a QCP (replacement) insert (Part No. 16-125 at catalog page 14) into engagement with the exposed end of body 23,

- (6) pull on the cable to draw the body 23 and the installed QCP insert into the plug housing,
- (7) reinstall the set screw through the plug housing into the installed QCP insert, and
- (8) manually retighten the cable clamp sleeve into the rear end of the plug housing, and
- (9) dispose of the old contact cartridge having the corroded or damaged contacts.

There is no need to think about color coding or cable wire functions, as the QCP insert can engage cable-end body 23 in only one way. There is no need to do anything concerning the contact elements inside body 23 which are cable conductor termination contacts.

As a result of the demonstrations described above, the Examiner agreed that, according to the prior art as illustrated by the Shaffer '875 reference, there is one plug contact in the path from each cable conductor to a socket contact. On the other hand, according to this invention as defined in each of claims 1, 2, 7, 31 and 32, and as embodied in the Green Plug, there are two contact elements in that path and they are in series, namely, a cable conductor termination contact element 22 (Figs. 15-17) within body 23 (which is molded onto the cable) and a cartridge contact 30, 31 (common or noncommon) in contact cartridge 20.

By examination of applicant's Figs. 13 and 15-17 on the one hand, and of the highlighted content of the reproduction of Shaffer '875's FIG. 4 appended to applicant's paper filed April 24, 2006, on the other hand, the Examiner agreed that the contacts disclosed by Shaffer are essentially permanently connected to the respective cable wires. The Examiner agreed that Shaffer '875 does not disclose a modular contact cartridge which can be removed as a unit from a plug without disturbing cable conductor termination contacts.

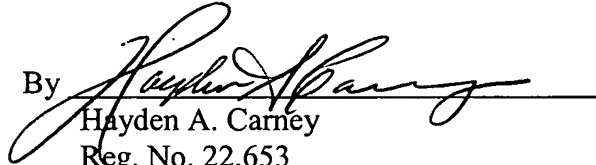
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The language of claims 1, 2, 7, 31 and 32 was reviewed, and wording which distinguished over the applied references was noted in each claim.

Counsel explained the virtue of the limited lateral movement afforded to the female ends of the several cartridge contact members, and noted how Stoner '558 teaches away from that virtue.

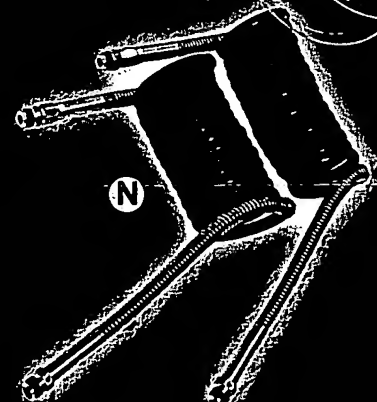
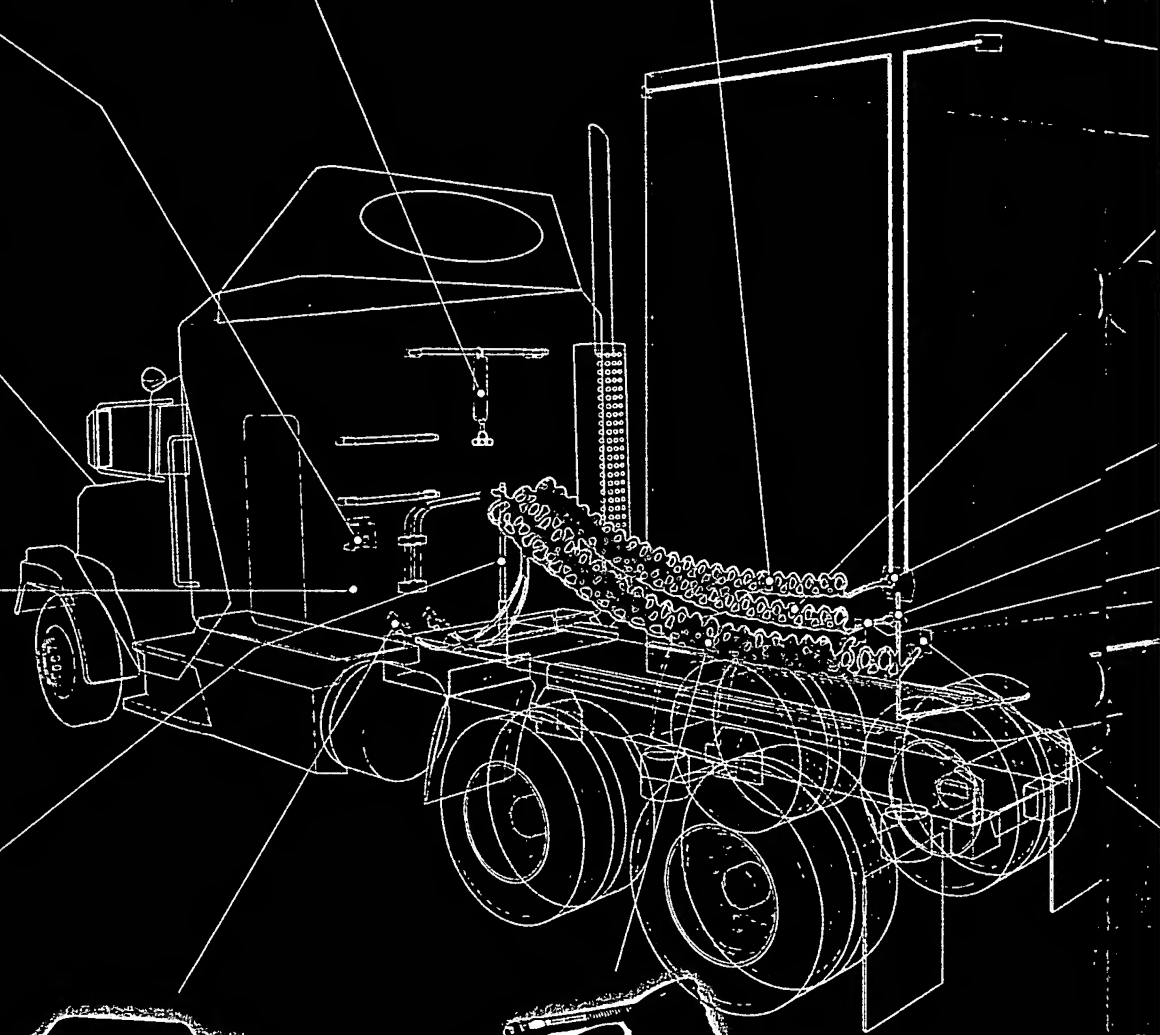
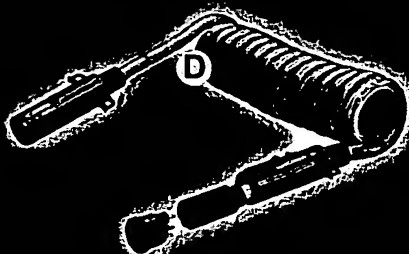
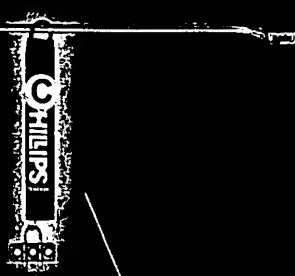
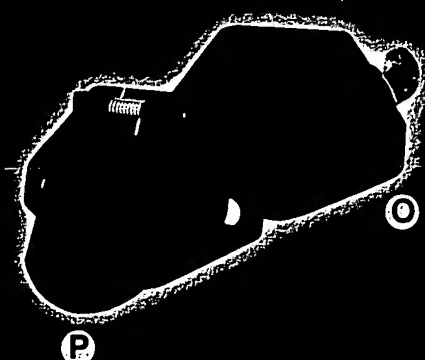
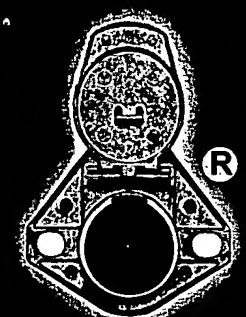
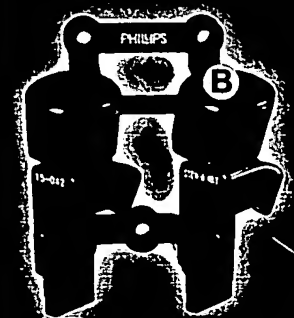
Respectfully submitted,
CHRISTIE, PARKER & HALE, LLP

By


Hayden A. Carney
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626/795-9900

HAC/rjf

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A. Battery Terminals

B. STOW-A-WAY™

C. Tracker Bar Kit

D. QCP™ (Quick-Connect Plug) Assembly

E. Dual Pole Liftgate Cable

F. PERMALITE™

G. STA-DRY® Socketbreaker

H. Dual Pole Socket

I. Anodized Gladhand

J. Shut-off Gladhand

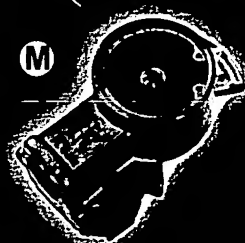
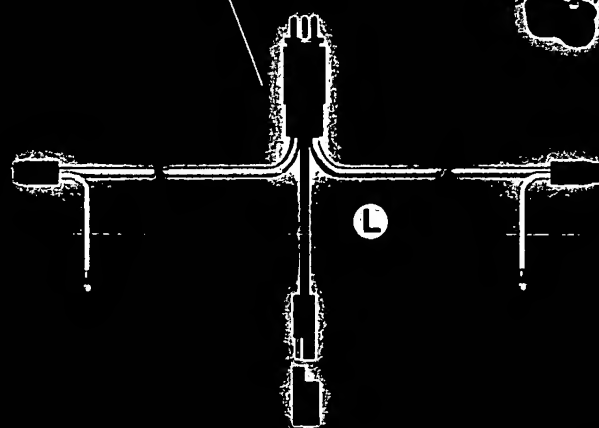
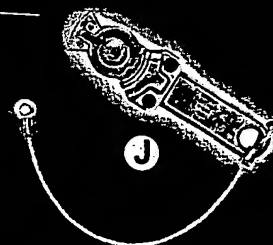
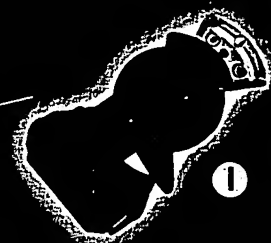
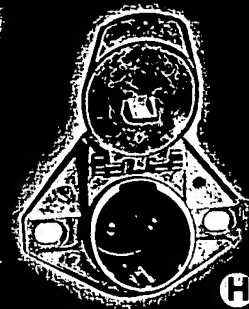
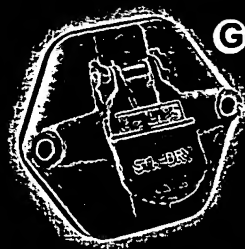
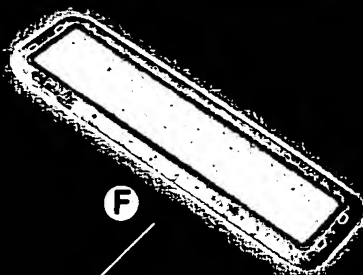
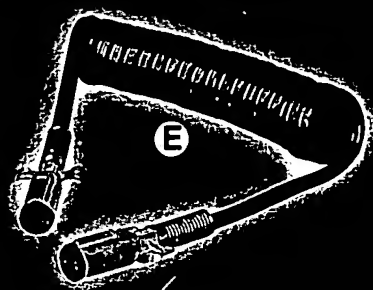
K. STA-DRY® Pigtails

L. STA-DRY® Harness

M. QWIK-E®

N. POLAR AIR™

O. QCS® ABS (Quick-Connect System)



P. STA-DRY® Socket
Q. Chrome Pogo Stick
R. Quick-Clean Terminal Brush





ELECTRICAL ASSEMBLIES

ELECTRICAL ASSEMBLIES

Dupont® jacketing performs in
-55°F to 230°F temperatures

Excellent recoil memory, chemical
resistance and abrasion resistance

Large finger grips for easy
coupling/uncoupling*

Unbreakable, anti-corrosive housing
resists impact, even at -25°F

Sealed against rear
entry water intrusion

Set screw for easy cartridge
replacement

QCP™

Quick-Connect Plug

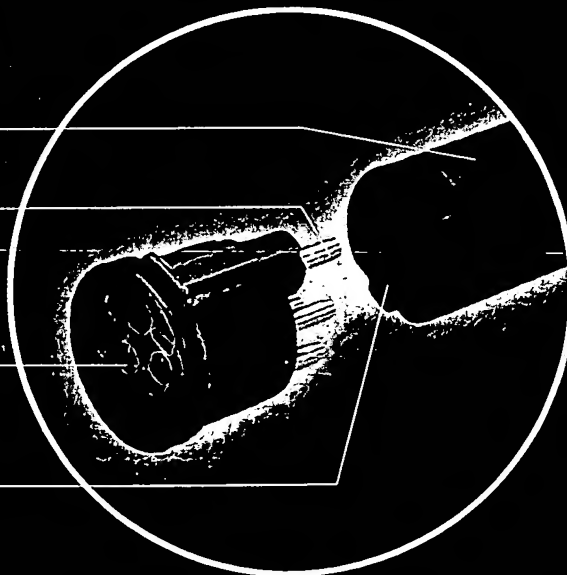
See page 5 & 8

Durable PVC overmold seals
connection and locks out corrosion

Floating brass pins for easy,
secure installation*

Pin contacts wrapped with
compression springs to retain
tight fit, time after time*

Molded wiper rings keep
contacts dry



* Standard on all Phillips cable assemblies and plugs



PHILIPS

We Make Products That Make A Difference

ELECTRICAL ASSEMBLIES

ALL ELECTRICAL CABLE ASSEMBLIES FEATURE:

- Large finger grips for coupling/uncoupling, even with gloves
- Extended plug interior for easy maintenance
- Protected with anti-corrosive, non-conductive, dielectric lithium grease
- PERMAPLUG™ has factory crimped terminals for best available electrical connection
- All cable assemblies rated for 12 volt systems

Made in
U.S.A.



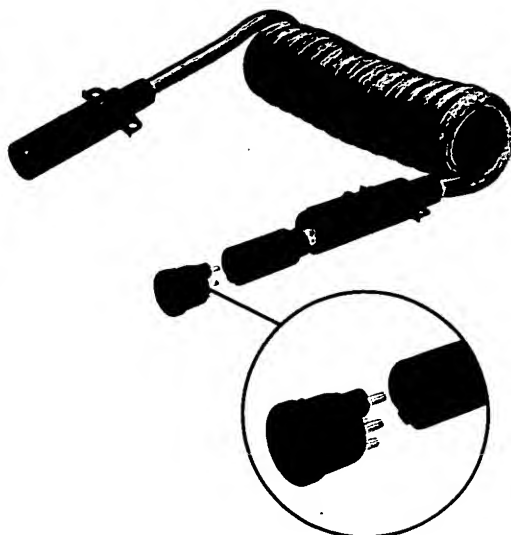
QCP™ (Quick-Connect Plug) Assembly

4/12, 2/10 & 1/8 ga. ABS Trailers

Part No.	Description	
30-9324	12', w/ Quick-Connect Plug	*
30-9624	15', w/ Quick-Connect Plug	*
30-9924	15', 48" lead w/ Quick-Connect Plug	*

*Replacement Cartridge 16-125 (page 14)

- Replaceable cartridge for quick & easy repair
- Plug is sealed for corrosion protection
- Best for ABS applications
- Temperature rating -55°F to 230°F (-48°C to 110°C)
- Excellent ratings for recoil memory, chemical resistance & abrasion resistance
- Unbreakable housing features Dupont® patented material
- Meets SAE J560 specifications
- Meets SAE J2394 specifications

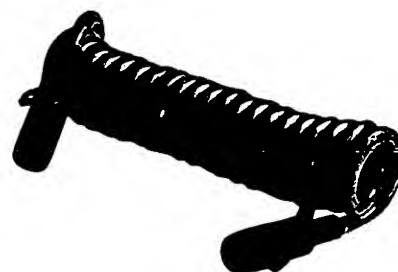


ABS LECTRACOIL™

4/12, 2/10 & 1/8 ga. ABS Trailers

Part No.	Description	
30-9320	12', w/ two PERMAPLUGS™	*
30-9321	12', w/ two zinc die-cast plugs	*
30-9620	15', w/ two PERMAPLUGS™	*
30-9621	15', w/ two zinc die-cast plugs	*
30-9920	15', 48" lead w/ two PERMAPLUGS™	*
30-9921	15', 48" lead w/ two zinc die-cast plugs	*

- Best for ABS applications
- Temperature rating -55°F to 230°F (-48°C to 110°C)
- Excellent ratings for recoil memory, chemical resistance & abrasion resistance
- Unbreakable PERMAPLUGS™ feature Dupont® patented material
- Zinc die-cast housing, reinforced for durability
- Meets SAE J560 specifications
- Meets SAE J2394 specifications



* Working length - As measured by pull force per SAE J2222. Length of raw cable is significantly longer.

ABS PERMACOIL™

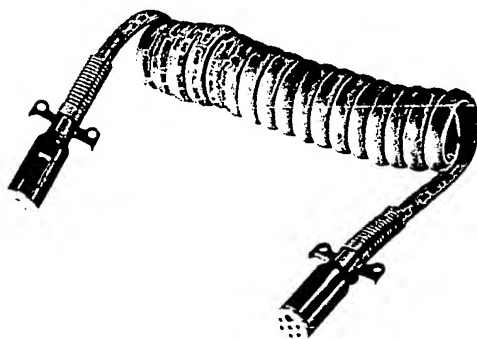


4/12, 2/10 & 1/8 ga. ABS Trailers

Part No.	Description	
30-4320	12', w/ two PERMAPLUGS™	*
30-4321	12', w/ two zinc die-cast plugs	*
30-4620	15', w/ two PERMAPLUGS™	*
30-4621	15', w/ two zinc die-cast plugs	*
30-4920	15', 48" lead w/ two PERMAPLUGS™	*
30-4921	15', 48" lead w/ two zinc die-cast plugs	*

- Good for ABS applications
- Temperature rating -90°F to 125°F (-68°C to 52°C)
- Good ratings for recoil memory, chemical resistance & abrasion resistance
- Unbreakable PERMAPLUGS™ feature Dupont® patented material
- Zinc die-cast housing, reinforced for durability
- Meets SAE J560 specifications
- Meets SAE J2394 specifications

ISOCOIL™



4/12, 2/10 & 1/8 ga. ABS Trailers

Part No.	Description	
31-9323	12', w/ two zinc die-cast plugs	*
31-9623	15', w/ two zinc die-cast plugs	*
31-9923	15', 48" lead w/ two zinc die-cast plugs	*

- For ISO/auxiliary applications
- Temperature range -55°F to 230°F (-48°C to 110°C)
- Excellent ratings for recoil memory, chemical resistance & abrasion resistance
- Male ground pin to prevent mis-connections
- Twisted pair brown and green wires to avoid electrical noise
- Zinc die-cast housing, reinforced for durability
- Meets ISO 3731 specifications (plug & socket)
- Meets SAE 2394 specifications (cable)

* Working length - As measured by pull force per SAE J2222. Length of raw cable is significantly longer.

PLUGS

- Large finger grips for ease of coupling/uncoupling
- Meets SAE J560 specifications (ISO meets ISO 3731)
- Floating brass pins for easy installation
- Extended housing for easy repair
- Wire insertion on 7-way (non-blade), 6-way and 4-way plugs

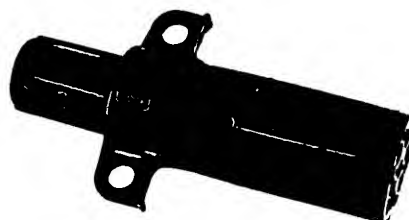
Made in
U.S.A.



PERMAPLUG™

Part No.	Description
16-730	PERMAPLUG™
16-730D	16-730, individual clamshell

- Anti-corrosive, Dupont Super-Tuff Nylon® housing
- 360 degree cable compression fitting holds cable tight
- Housing resists magnesium chloride, salt, oil, grease and fuels
- 15-711 replacement insert
- Unbreakable, made from Dupont® patented material
- Plugs fit all SAE J560 7-way cables
- ABS insert protects housing from impacts
- Easy replacement insert



Zinc Die-Cast Plug

Part No.	Description
15-710	Industry-standard plug
15-730	Industry-standard plug w/ cable guard
15-730D	15-730, individual clamshell

- Reinforced zinc die-cast for durability
- 15-711 replacement insert
- 15-731 replacement cable guard
- Plugs fit all SAE J560 7-way cables
- Easy replacement insert



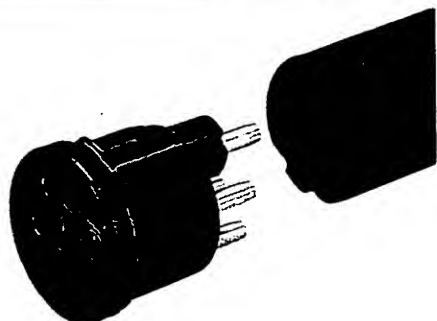
ISO Plug

Part No.	Description
15-830	ISO Plug w/ cable guard

- Replacement plug for ISO 3731 coiled and straight cables
- Reinforced zinc die-cast housing for durability
- Male ground pin to prevent mis-connection
- 15-731 replacement cable guard
- 16-811 replacement insert
- Easy replacement insert



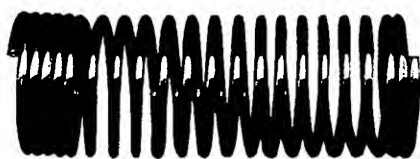
QCP™ Insert



Part No.	Description
16-125	Replaceable Cartridge Insert

- Replacement cartridge for QCP™ Assembly ONLY (see page 5 & 8)
- Machined brass pins
- Floating pins for easy coupling/uncoupling

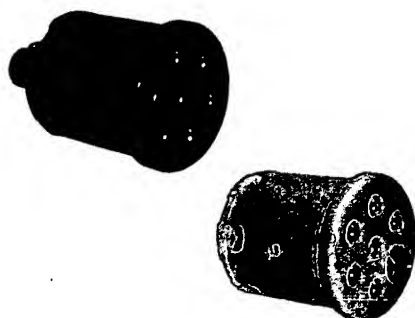
Cable Guard



Part No.	Description
15-731	Cable Guard

- Spring for 15-710, 15-730 & 15-830 Plugs

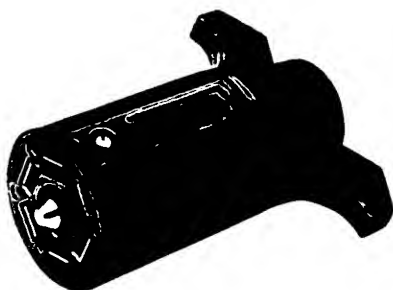
Replacement Insert



Part No.	Description
15-711	For standard Phillips SAE J560 Plugs, black
16-811	For Phillips ISO 3731 Plug, yellow

- 15-711 Fits Phillips 16-730, 15-730 & 15-710 plugs
- 16-811 Fits Phillips 15-830 plugs

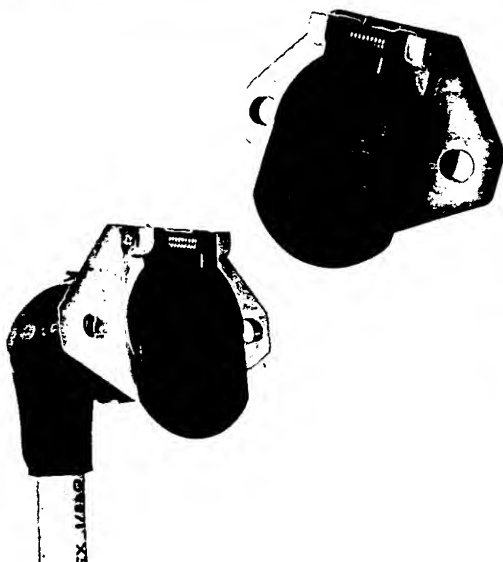
7-Way Blade Type



Part No.	Description
16-713	7-way blade type

- For use with most light-duty truck & RV OEM applications
- Anti-corrosive, super-tuff housing
- Large finger grips for easy coupling/uncoupling
- Brass terminations for superior conductivity
- For use with 16-714 socket (page 20)

ISO QCS® Harness



Replacement Sockets

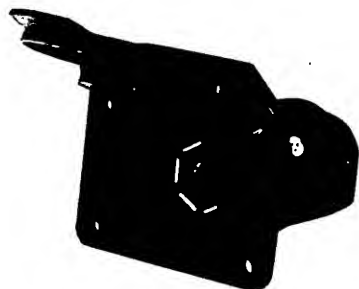
Part No.	Description
16-826	2-hole, bullet termination with locking clip, female ground pin, recommended for Phillips ISO QCS® only

QCS®

Part No.	Description
16-7402	Straight back, 48" blunt-cut cable, includes ISO socket
16-7422	6 o'clock, 48" blunt-cut cable, includes ISO socket

- For ISO/auxiliary applications
- Meets ISO 3731 specifications
- Uses female ground pin
- 3 o'clock, 9 o'clock and 12 o'clock exits available

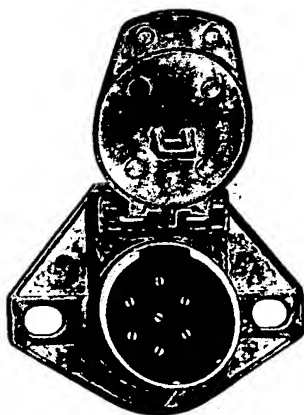
7-Way Blade Type



Part No.	Description
16-714	7-way blade socket

- For use with most light-duty truck & RV OEM applications
- Mates with 16-713 plug (page 14)
- Non-metallic housing for long life
- Brass terminations for superior conductivity

7-Way Sockets



Part No.	Description
15-720	2-hole, wire insertion, split pin
15-720D	15-720, individual clamshell
15-721	2-hole, wire insertion, solid pin
15-722	3-hole, wire insertion, split pin
15-724	Replacement insert for 15-720, 15-722 split pin

- Zinc die-cast housing for durability
- Elongated holes for mounting adaptability
- Stainless steel hinge pin and spring for long-life
- Full-opening lid
- Meets SAE J560 specifications
- Reduce exposure to contaminants & moisture, use socket boot P/N 15-740 (page 22)

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